



Revitalization in the Grand Calumet River AOC

J. Stuart Carlton

Illinois-Indiana Sea Grant/Coastal & Great Lakes Social Science Lab
Department of Forestry & Natural Resources
Purdue University

Rebecca Nixon

Illinois-Indiana Sea Grant/Coastal & Great Lakes Social Science Lab
Department of Forestry & Natural Resources
Purdue University

Zhao Ma

Department of Forestry & Natural Resources
Purdue University



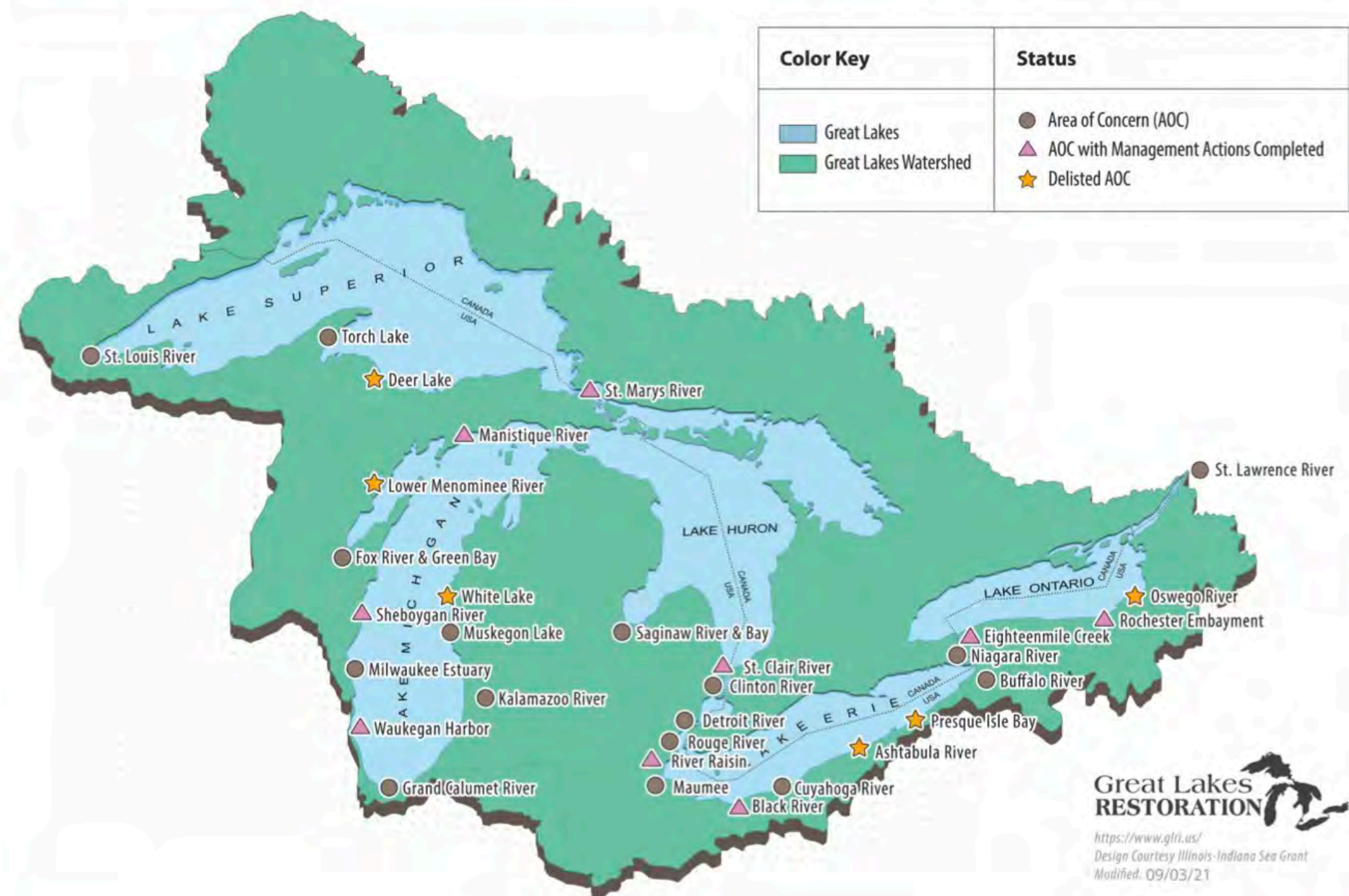
Logos and thanks



What are Areas of Concern?

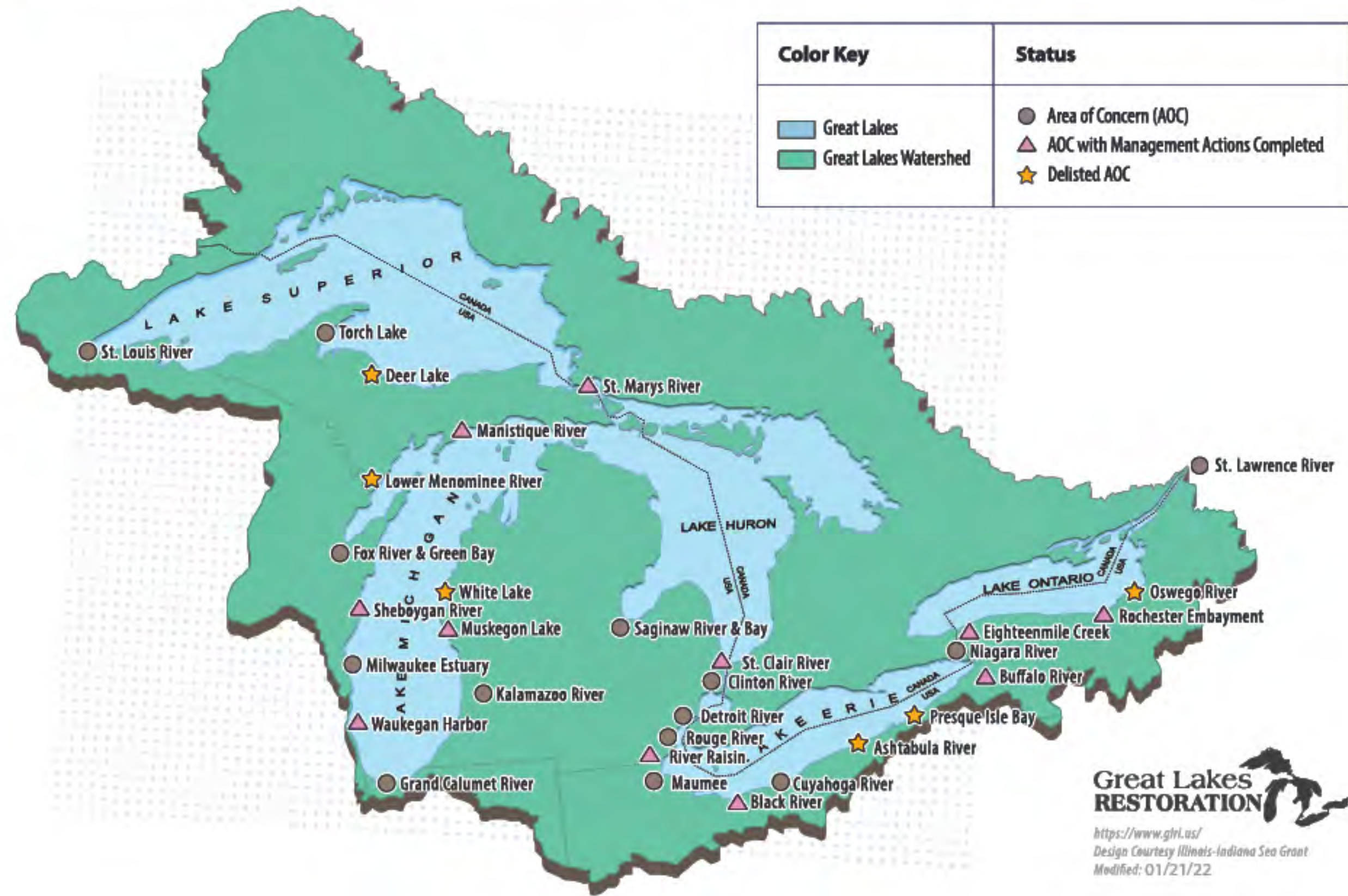
The [U.S.-Canada Great Lakes Water Quality Agreement](#) (Annex 1 of the 2012 Protocol) defines AOCs as "geographic areas designated by the Parties where significant impairment of beneficial uses has occurred as a result of human activities at the local level." An AOC is a location that has experienced environmental degradation. EPA and other federal and state agencies are working to restore the 26 remaining U.S. AOCs in the Great Lakes basin.

U.S. Great Lakes Areas of Concern



- [Restoring Great Lakes Areas of Concern](#)
- [Beneficial Use Impairments](#)
- [Remedial Action Plans](#)
- [Legacy Act](#)

U.S. Great Lakes Areas of Concern



**BUIs: Ecosystem services
degraded by AOC impairment**

- Restrictions on Fish and Wildlife Consumption
- Tainting of Fish and Wildlife Flavor
- Degraded Fish and Wildlife Populations
- Fish Tumors or Other Deformities
- Bird or Animal Deformities or Reproductive Problems
- Degradation of Benthos
- Restrictions on Dredging Activities
- Eutrophication or Undesirable Algae
- Restrictions on Drinking Water Consumption or Taste and Odor Problems
- Beach Closings
- Degradation of Aesthetics
- Added Costs to Agriculture or Industry
- Degradation of Phytoplankton and Zooplankton Populations
- Loss of Fish and Wildlife Habitat

R3 framework

The R³ Paradigm: “Its not just sediment remediation”



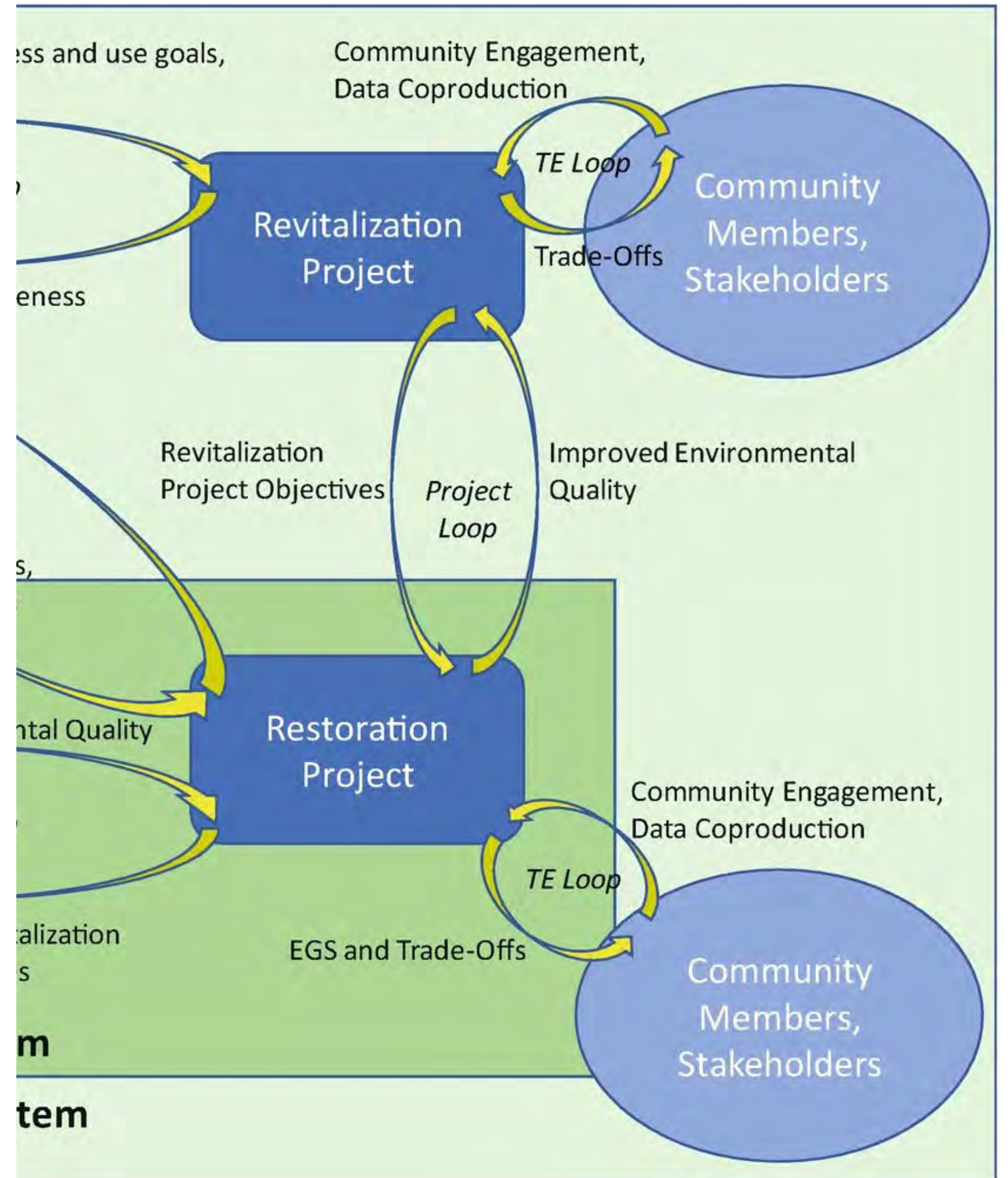
Courtesy M. Tuchman, S. Cieniawski

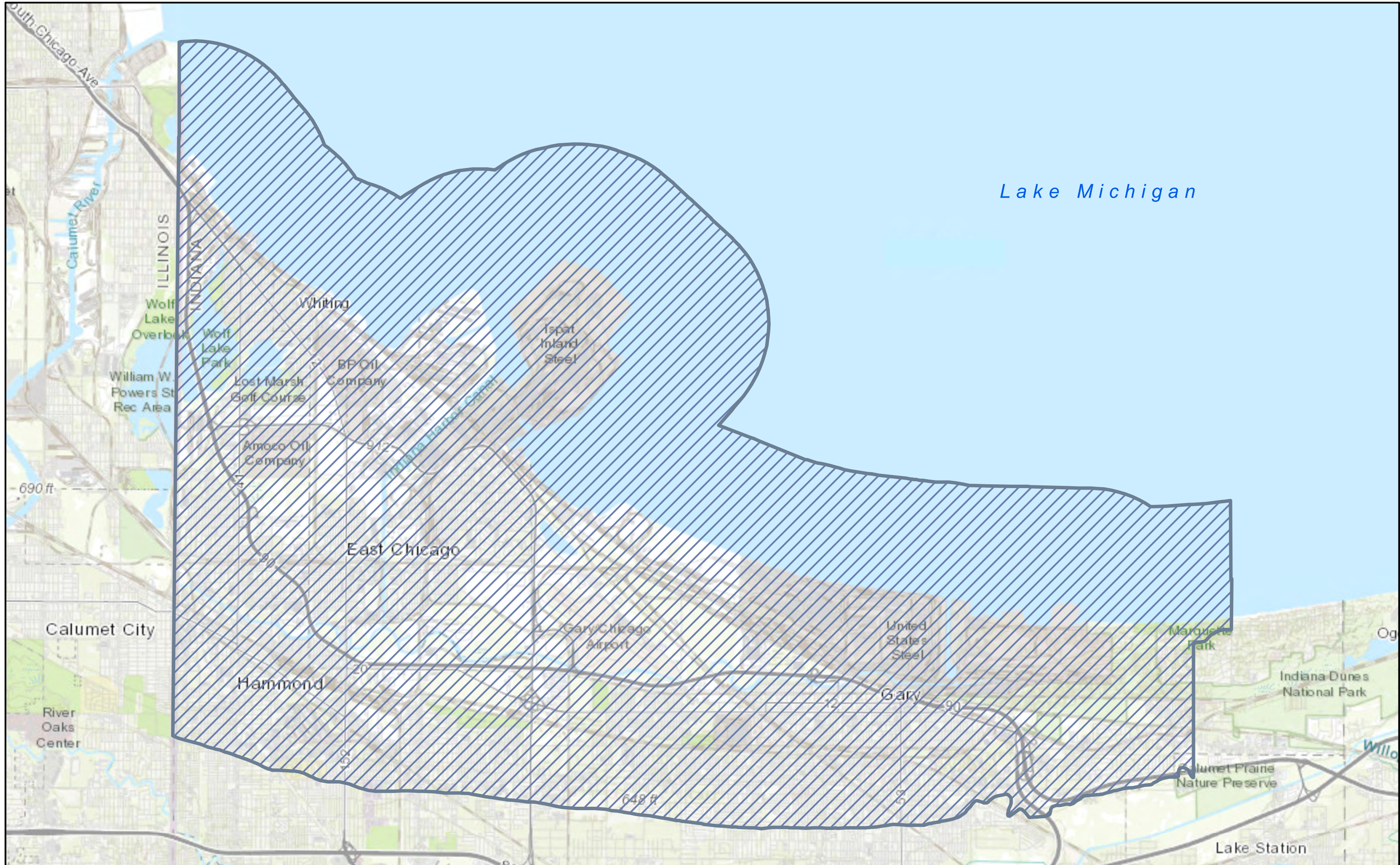
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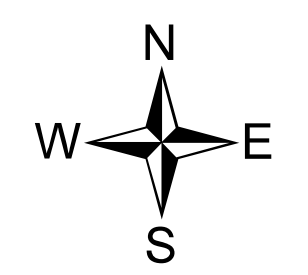
Courtesy M. Tuchman, S. Cieniawski

What evidence can we find of this connection?





**Grand Calumet River
Area of Concern
Indiana**



 Area of Concern

Map projection: UTM Zone 16, NAD 1983
Data sources: ESRI, NOAA, IDEM
Created: November 2021



The Grand Calumet River is **really**
degraded



- Restrictions on Fish and Wildlife Consumption
- Tainting of Fish and Wildlife Flavor
- Degraded Fish and Wildlife Populations
- Fish Tumors or Other Deformities
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\$1 billion + on cleanup





2 BUIs removed

(Added costs to agriculture & drinking water issues)

Is this leading to revitalization?

Signs of revitalization

1. Housing development and economic diversification

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2. Improved access & visible signs of improvement



2. Improved access & visible signs of improvement



3. Cross-sectoral and multi-scalar collaboration led by local champions

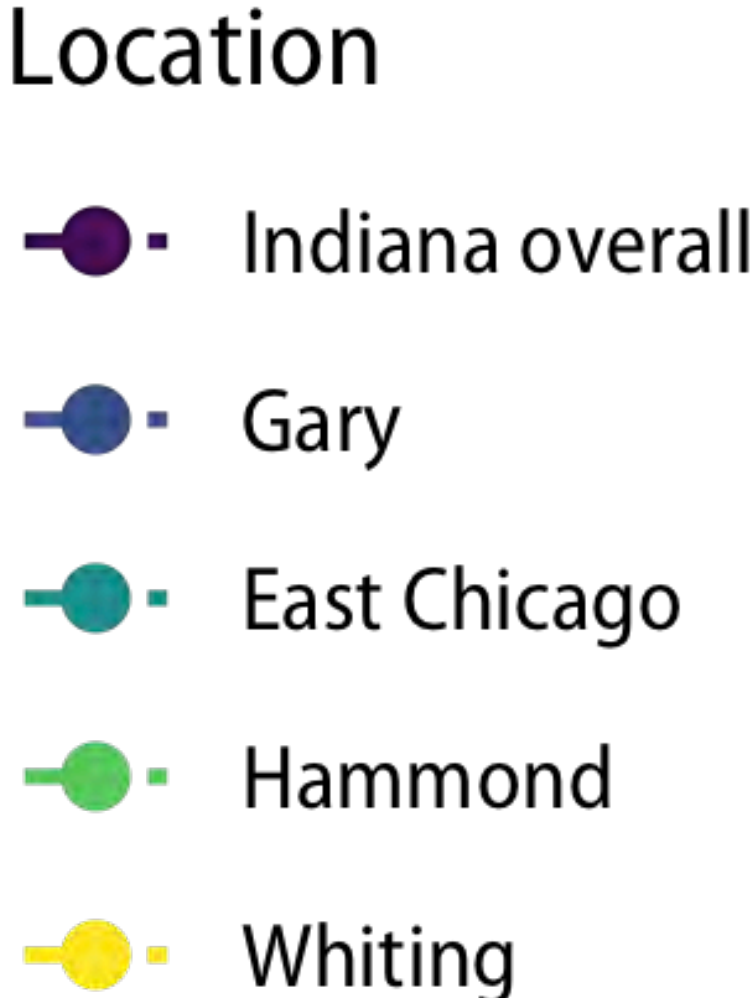
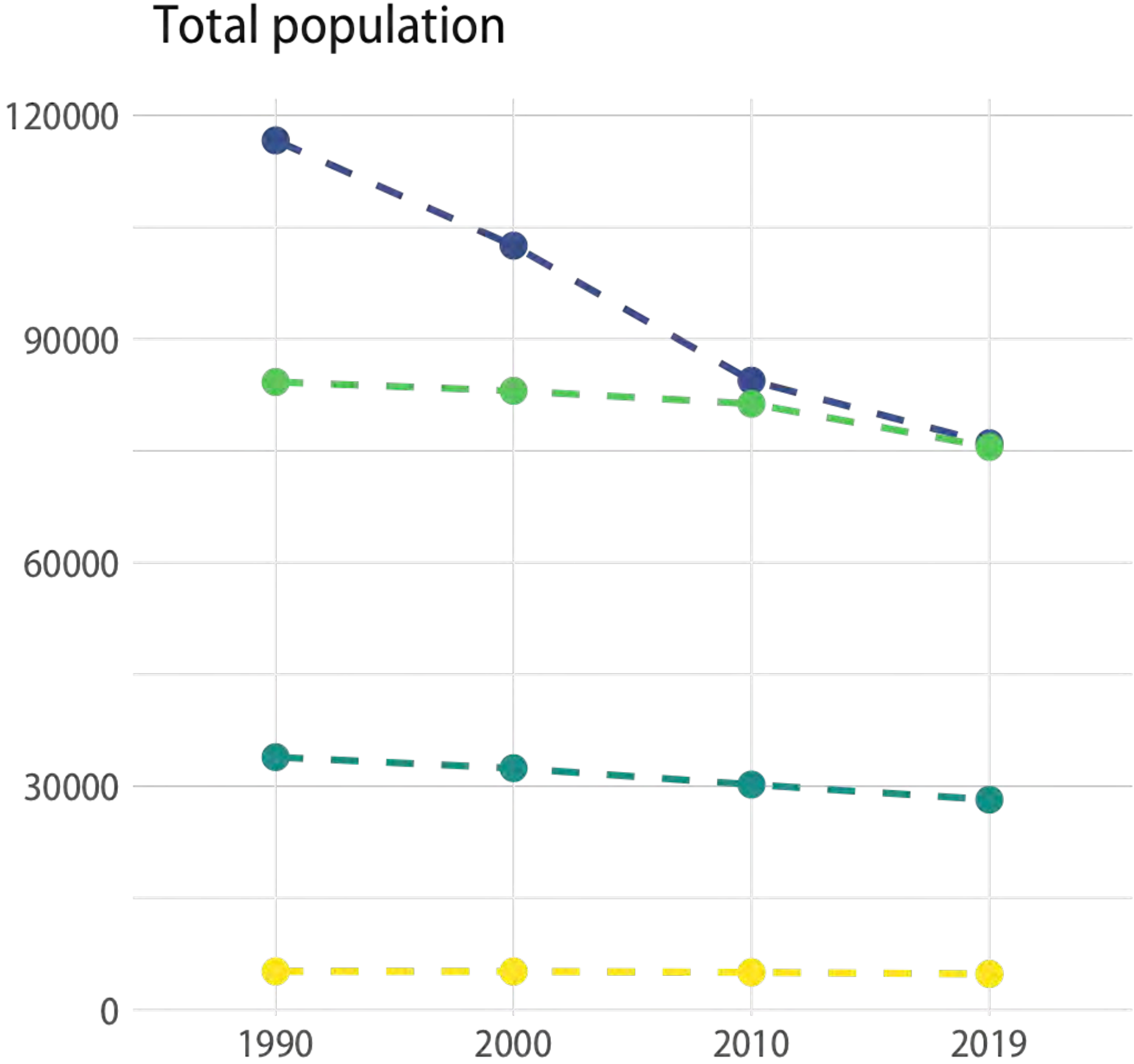
3. Cross-sectoral and multi-scalar collaboration led by local champions



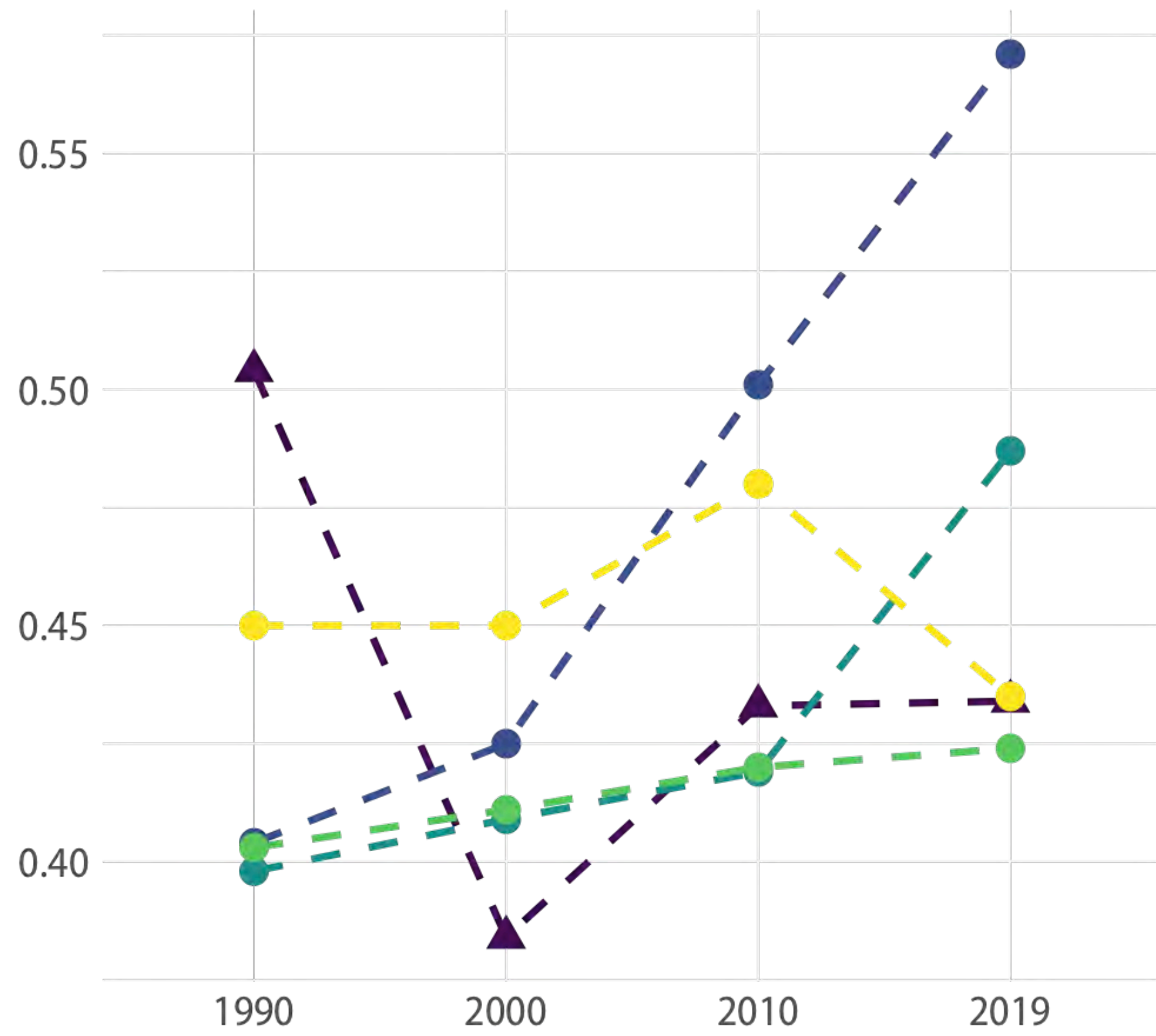
Signs of progress are apparent

**Do we see evidence of revitalization
in the secondary data?**

A. Population characteristics



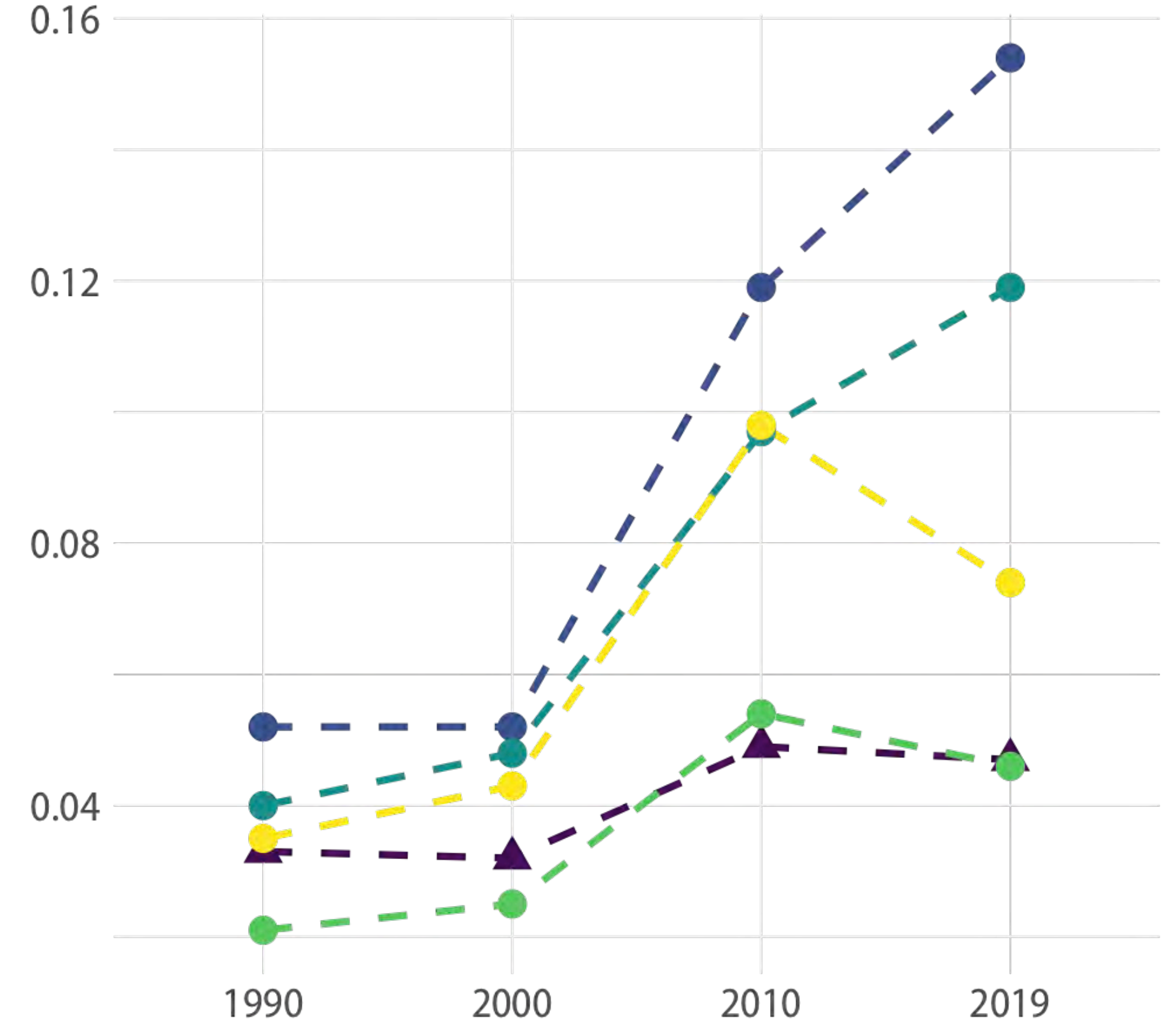
Housing units per capita



Location

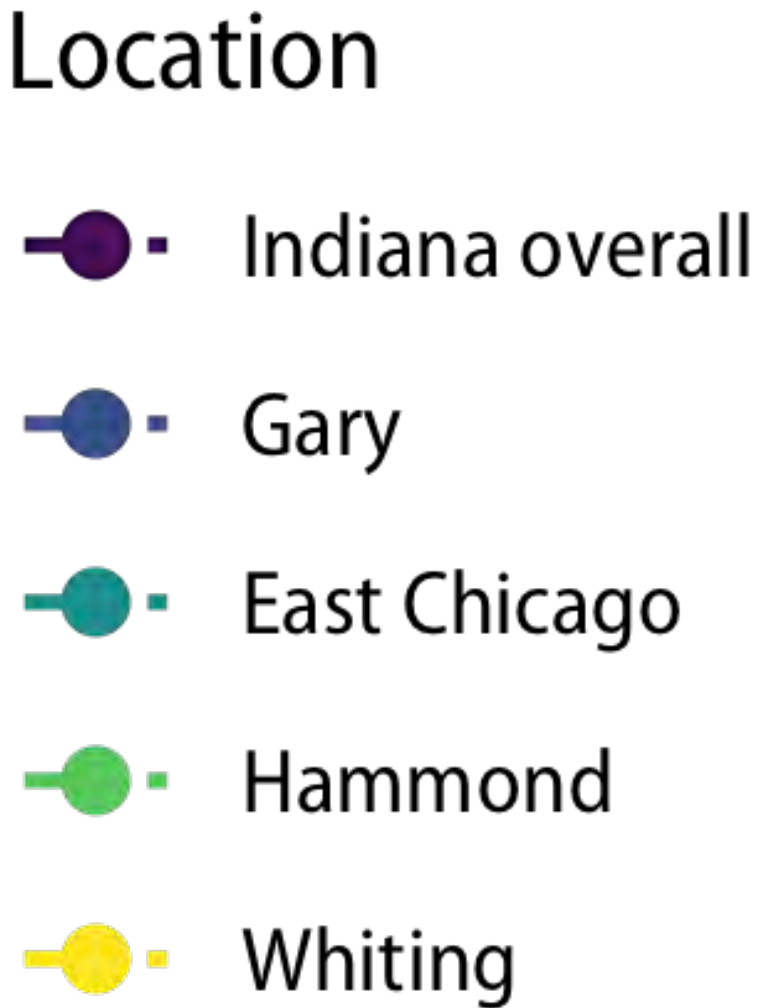
- Indiana overall
- Gary
- East Chicago
- Hammond
- Whiting

Vacant housing units per capita



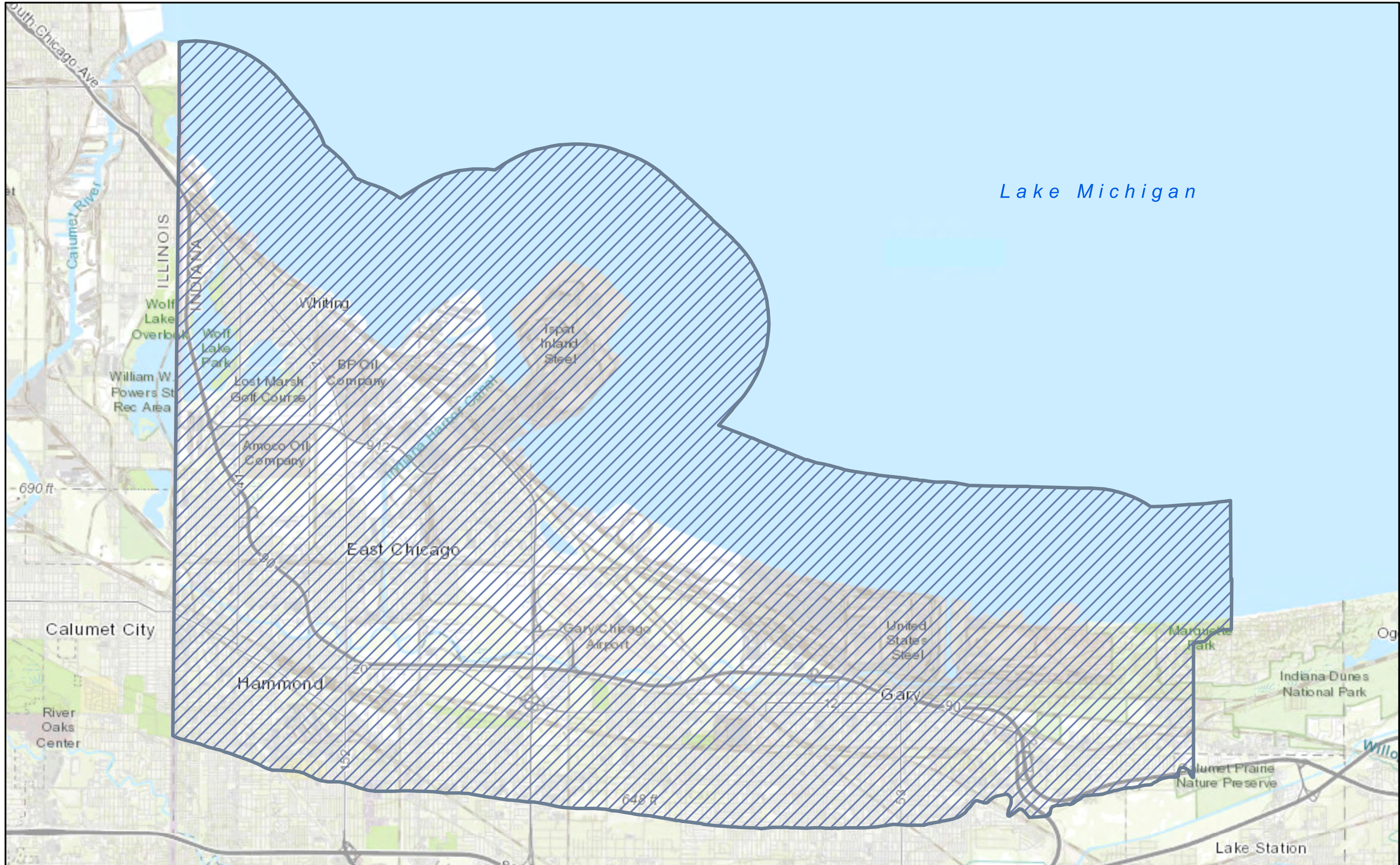
- Location
- Indiana overall
 - Gary
 - East Chicago
 - Hammond
 - Whiting

C. Income characteristics

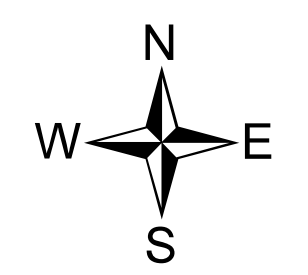



**Do we see evidence of revitalization
in the secondary data?**

Not really



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Indiana**



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Let's chat: carltons@purdue.edu

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